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OCT 12 2004  
PATENT & TRADEMARK OFFICE

**TRANSMITTAL LETTER**  
**(General - Patent Pending)**

Docket No.  
**FIS920010254US1**

In Patent Application No. **AUSSCHNITT ET AL.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/035,061	12/28/2001	Michael Patrick Stafira	32074	2877	3269

Title: **PHASE SHIFTED TEST PATTERN FOR MONITORING FOCUS AND ABERRATIONS IN OPTICAL PROJECTION SYSTEMS**

TO THE DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE:

Transmitted herewith is:

Petition under 37 CFR 1.182 To Consider Information Disclosure Statement; Copy of office action dated March 5, 2004; Form PTO-1449; Copies of publications previously submitted December 28, 2001.

in the above identified application.

- ☐ No additional fee is required.
- ☐ A check in the amount of \_\_\_\_\_ is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. **09-0458 FI-298** as described below.
- ☒ Charge the amount of **\$310.00**
- ☒ Credit any overpayment.
- ☒ Charge any additional fee required.
- ☐ Payment by credit card. Form PTO-2038 is attached.

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

*Todd M.C. Li*

Signature

Dated: 10/07/2004

Todd M.C. Li  
IBM Corporation, IPLAW  
2070 Route 52, Bldg. 300, ZIP 482  
Hopewell Junction, NY 12533-6531  
Registration No. 45,554

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on

10/07/2004

(Date)

*Nicole Barrese 10/17/04*

Signature of Person Mailing Correspondence

Nicole Barrese

Typed or Printed Name of Person Mailing Correspondence

CC:

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING  
DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS  
FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: THE  
COMMISSIONER FOR PATENTS, ALEXANDRIA, VA 22313, ON

10/7/04  
Date of Deposit

PETITION UNDER 37 C.F.R. §1.182

MAIL STOP: PETITIONS

NICOLE BARRESE

Person Making Deposit

Nicole Barrese

10-7-04

Signature

Date



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

) Attorney Docket No. FIS920010254US1

) Confirmation No. 3269

Ausschnitt et al.

)

)

Application No.: 10/035,061

) Examiner: Michael Patrick Stafira

Filed: December 28, 2001

) Group Art Unit: 2877

For: PHASE SHIFTED TEST

)

PATTERN FOR MONITORING

)

FOCUS AND ABERRATIONS IN

)

OPTICAL PROJECTION SYSTEMS

)

Date:

Oct. 7, 2004

The Commissioner for Patents

P.O. Box 1450

OFFICE OF PETITIONS

MAIL STOP: PETITIONS - SPECIAL HANDLING

Alexandria, VA 22313-1450

10/13/2004 HALI11 00000023 090458 10035061

02 FC:1806 180.00 DA

PETITION UNDER 37 CFR §1.182 TO CONSIDER

INFORMATION DISCLOSURE STATEMENT

10/13/2004 HALI11 00000023 090458 10035061

01 FC:1051 130.00 DA  
Sir:

This is a petition under 37 C.F.R. §1.182 to have considered

**Ser. No. 10/035,061**

the references listed in the enclosed Information Disclosure Statement (IDS), which references were previously cited in an IDS filed in the above-referenced application on December 28, 2001, but which were not considered by the Examiner. A Notice of Allowance has been received in the above-referenced application, indicating that the Issue Fee is due on Nov. 29, 2004. The Commissioner is hereby authorized to charge to Deposit Account No. 09-0458 the amount of \$ 130.00 to cover the fee under 37 C.F.R. § 1.17(h). Any additional fees due or overpayments should also be charged or credited to Deposit Account No. 09-0458.

The Examiner returned the form PTO-1449 that was filed on Dec. 28, 2001 with the Office Action mailed on March 3, 2004, but did not consider three publications cited on form PTO-1449, indicating that they were not considered "since they failed to prove a date of publication." A copy of the Office Action dated March 3, 2004 is hereby enclosed, including form PTO-1449 signed by the Examiner, along with copies of the references submitted on Dec. 28, 2001.

Applicants respectfully submit that these references should have been considered pursuant to 37 C.F.R. §1.98(b)(5), which states:

"Each publication listed in an information disclosure statement must be identified by publisher, author (if any), title, relevant pages of the publication, date, and place of publication."

Under 37 C.F.R. §1.98(a):

"[a]ny information disclosure statement filed under §1.97 shall include:

(1) A list of all patents, publications, applications, or other information submitted for consideration by the Office;

(2) A legible copy of:

...

(ii) Each publication or that portion which caused it to be listed;"

Applicants note that §1.98(a) requires that the IDS separately include a list of publications and copies of the publications, but 37 C.F.R. §1.98(b)(5) does not require that the date of publication be specifically part of the list specified in §1.98(a) or on form PTO-1449. Applicants further note that copies of the publications were submitted in compliance with 37 C.F.R. §1.98(a)(2)(ii) as part of the IDS filed on Dec. 28, 2001, and that these copies of the publication included the dates of publication on the cover of those publications.

Applicants respectfully submit that the submission on Dec. 28, 2001 was in compliance with 37 C.F.R. §1.98, and the publications should have been considered at that time.

In the alternative, Applicants respectfully submit that even if 37 C.F.R. §1.98(b)(5) can be construed to require a listing of the dates of publication on Form PTO-1449, under 37 C.F.R. §1.97(f), the submission of the IDS on Dec. 28, 2001 was a bona fide attempt to comply with §1.98, and the dates of publication were inadvertently omitted from form PTO-1449, and therefore additional time is hereby requested to comply with 37 C.F.R. §1.97 and 37 C.F.R. §1.98. Accordingly, a revised Form PTO-1449 is hereby enclosed listing the publications that were not considered (as indicated above, copies of those publications which were submitted on Dec. 28, 2001 are also enclosed).

The Commissioner is authorized to charge to Deposit Account No. 09-0458 the amount of \$180.00 to cover the fee under 37 C.F.R. § 1.17(p). Any additional fees due or overpayments should also be charged or credited to Deposit Account No. 09-0458.

Ser. No. 10/035,061

It is respectfully requested that the information be considered by the Examiner and that a copy of the enclosed Form PTO-1449 be returned indicating that such information has been considered.

Applicants' undersigned attorney may be reached by telephone at (845) 894-6919. All correspondence should continue to be directed to the address listed below.

Respectfully submitted,

*Todd M. C. Li 10/7/2004*

Todd M. C. Li  
Registration No. 45,554

INTERNATIONAL BUSINESS MACHINES CORPORATION  
Intellectual Property Law Department  
Bldg 300/Zip 482  
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Hopewell Junction, New York 12533  
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UNITED STATES PATENT AND TRADEMARK OFFICE

OCT 12 2004

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILED DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/035,061

12/28/2001

Christopher P. Ausschnitt

FIS9-2001-0254 us1

3269

32074

7590

03/05/2004

INTERNATIONAL BUSINESS MACHINES CORPORATION

DEPT. 18G

BLDG. 300-482

2070 ROUTE 52

HOPEWELL JUNCTION, NY 12533

EXAMINER

STAFIRA, MICHAEL PATRICK

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 03/05/2004

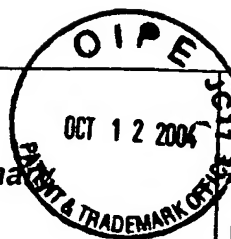
OA  
due  
6/05/04

J

Please find below and/or attached an Office communication concerning this application or proceeding.

IBM  
E. FISHER/PLAW  
2004 MAR -9 A 12:49

## Office Action Summary



Application No.

10/035,061

Applicant(s)

AUSSCHNITT ET AL

Examiner

Michael P. Stafira

Art Unit

2877

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —  
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-9 and 14-18 is/are rejected.
- 7) ☒ Claim(s) 4-6, 10-13, 19, 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Kirk ('486).

#### **Claim 1**

Kirk ('486) discloses providing a reticle (Fig. 5, Ref. 500) having a test pattern, said test pattern having a first feature (Fig. 5, Ref. 501) and a second feature (Fig. 5, Ref. 502), said first feature comprising a blazed grating capable of forming an asymmetric pattern of illumination energy passing there through, said asymmetric pattern rotationally oriented in a first direction (Col. 4-5, lines 66-6); exposing a photosensitive material to illumination energy passing through said first and second features to form a first feature image and a second feature image, respectively; measuring a relative location of said first feature image with respect to said second feature image; and computing a lens aberration parameter in accordance with said relative location (Col. 4, lines 53-61, Col. 6-7, lines 50-20).

#### **Claim 2**

The reference of Kirk ('486) further discloses exposing, said blazed grating projects a single beam (Col. 6-7, lines 50-20).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirk ('486) and in further view of Kouno et al. ('858).

**Claim 3**

Kirk ('486) substantially teaches the claimed invention except that it does not show a test pattern is a box-in-box pattern having inner and outer boxes. Kouno et al. ('858) shows that it is known to provide a test pattern that is box-in-box with inner and outer boxes (See Fig. 7) for measuring optical aberration in an optical system. It would have been obvious to combine the device of Kirk ('486) with the box-in-box of Kouno et al. ('858) for the purpose of providing a pattern that is able to measure smaller aberrations, therefore increasing the sensitivity of the measurement.

5. Claims 7,8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kirk ('486).

**Claim 7**

Kirk ('486) discloses providing a reticle (Fig. 5, Ref. 500) having a plurality of test patterns (Fig. 5, Ref. 501-505), each of said test patterns including and associated with a first feature and a second feature, each of said first features having a blazed grating, wherein each of said blazed gratings has an associated grating orientation different from the orientation of each of

Art Unit: 2877

the others of said plurality of test patterns (Col. 4-5, lines 53-6); exposing a photosensitive material through said plurality of test patterns to form a plurality of test images, each of said test images having a first image formed from said first feature and an associated second image formed from said second feature of the associated test pattern (Col. 6, lines 50-62); measuring a relative location of said first image with respect to said associated second image within each of said plurality of test images to obtain a set of relative locations wherein each of said relative locations in said set is associated with a different grating orientation; and computing a lens aberration property in accordance with said set of relative locations (Col. 6-7, lines 50-20).

**Claim 8**

The reference of Kirk ('486) further discloses exposing, said blazed grating projects a single beam (Col. 6-7, lines 50-20).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirk ('486) and in further view of Kouno et al. ('858).

**Claim 9**

Kirk ('486) substantially teaches the claimed invention except that it does not show a test pattern is a box-in-box pattern having inner and outer boxes. Kouno et al. ('858) shows that it is known to provide a test pattern that is box-in-box with inner and outer boxes (See Fig. 7) for measuring optical aberration in an optical system. It would have been obvious to combine the device of Kirk ('486) with the box-in-box of Kouno et al. ('858) for the purpose of providing a pattern that is able to measure smaller aberrations, therefore increasing the sensitivity of the measurement.

7. Claims 14, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kirk ('486).

**Claim 14**

Kirk ('486) discloses a test pattern (Fig. 5, Ref. 500) having a first feature and a second feature (Fig. 5, Ref. 501, 502), said first feature comprising a blazed grating capable of forming an asymmetric pattern of illumination energy passing there through and said asymmetric pattern rotationally oriented in a first direction (Col. 4-5, lines 41-6).

**Claim 15**

The reference of Kirk ('486) further discloses exposing; said blazed grating projects a single beam (Col. 6-7, lines 50-20).

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirk ('486) and in further view of Kouno et al. ('858).

**Claim 16**

Kirk ('486) substantially teaches the claimed invention except that it does not show a test pattern is a box-in-box pattern having inner and outer boxes. Kouno et al. ('858) shows that it is known to provide a test pattern that is box-in-box with inner and outer boxes (See Fig. 7) for measuring optical aberration in an optical system. It would have been obvious to combine the device of Kirk ('486) with the box-in-box of Kouno et al. ('858) for the purpose of providing a pattern that is able to measure smaller aberrations, therefore increasing the sensitivity of the measurement.

Art Unit: 2877

9. Claim 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Kirk ('486).

**Claim 17**

Kirk ('486) discloses a reticle (Fig. 5, Ref. 500) having a plurality of test patterns (Fig. 5, Ref. 501, 502), each of said test patterns including and associated with a first feature and a second feature, each of said first features comprising a blazed grating capable of forming an asymmetric pattern of illumination energy passing there through (Col. 4, lines 53-65), said asymmetric pattern having a rotational orientation different from the orientation of each of the other of said plurality of test patterns (Col. 4-5, lines 53-6).

10. Claims 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirk ('486) and in further view of Kouno et al. ('858).

**Claim 18**

Kirk ('486) substantially teaches the claimed invention except that it does not show a test pattern is a box-in-box pattern having inner and outer boxes. Kouno et al. ('858) shows that it is known to provide a test pattern that is box-in-box with inner and outer boxes (See Fig. 7) for measuring optical aberration in an optical system. It would have been obvious to combine the device of Kirk ('486) with the box-in-box of Kouno et al. ('858) for the purpose of providing a pattern that is able to measure smaller aberrations, therefore increasing the sensitivity of the measurement.

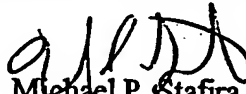
*Allowable Subject Matter*

11. Claims 4-6,10-13,19,20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Stafira whose telephone number is 571-272-2430. The examiner can normally be reached on 4/10 Schedule Mon.-Thurs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Michael P. Stafira  
Primary Examiner  
Art Unit 2877

February 25, 2004

**INFORMATION DISCLOSURE STATEMENT**  
(Use several sheets if necessary)

Docket Number (Optional)  
FIS9-2001-02 US1

Application Number  
10/035061

Applicant(s)  
AUSSCHNITT ET AL.

Filing Date  
12-28-2001

Group Art Unit  
2877

OCT 12 2004

**U.S. PATENT DOCUMENTS**

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
W		5,805,290	09-08-98	AUSSCHNITT ET AL.			
W		6,091,486	07-18-00	KIRK			
ed		5,300,786	04-05-94	BRUNNER ET AL.			

10/035061  
12/28/01

**FOREIGN PATENT DOCUMENTS**

REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						YES	NO

**OTHER DOCUMENTS** (Including Author, Title, Date, Pertinent Pages, Etc.)

ND	<del>SPIE 3697 - "Application of blazed gratings for determination of equivalent primary azimuthal aberrations" Kirk and Proglar</del> <del>SPIE 4000 - "Impact of high order aberrations on the performance of the aberration monitor" - Dirksen et al.</del>
	<del>SPIE 4000 - "In situ measurement of lens aberrations" Farrar et al.</del>

EXAMINER

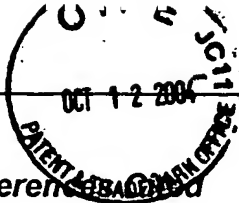
Michael Stahl

DATE CONSIDERED

2-25-04

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

\* The following were not considered since they failed to provide a date of publication.

**Notice of Reference**

Application/Control No.

10/035,061

Applicant(s)/Patent Under  
Reexamination  
AUSSCHNITT ET AL.

Examiner

Michael P. Stafira

Art Unit

2877

Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,674,511	01-2004	Nomura et al.	355/55
X	B	US-6,091,486	07-2000	Kirk, Joseph P.	356/124
	C	US-6,437,858	08-2002	Kouno et al.	356/124
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.